15¢
$5.50 A YEAR

March 19, 1955

VOL. 67, NO. 12 PAGES 177-192

SCIENCE NEWS LETTER

®

THE WEEKLY SUMMARY OF CURRENT SCIENCE

Portable Reactor

See Page 188

A SCIENCE SERVICE PUBLICATION

PHYSICS

New H-Bomb Speculation

A half dozen different types of fusion bombs probably exist today, some of which are made up of A-bomb and newer fusion devices.

► BECAUSE THE exact nature of the hydrogen bomb has not been revealed by the Atomic Energy Commission, there is continued speculation as to its composition, particularly that of the thermonuclear device exploded with spectacular results on March 1, 1954.

There are probably a half-dozen kinds of so-called hydrogen or more properly fusion bombs in which lighter chemical elements react to makes heavier ones, releasing some of their mass as energy.

Some of these bombs are really combinations of the A-bombs first devised and the newer fusion devices.

In fact, the light elements are started fusing by a trigger that provides extreme heat. This most easily, perhaps, is a conventional A-bomb made of uranium 235 or plutonium. Thus any superbomb or H-bomb is necessarily larger than an A-bomb, in which the materials fission or split into lighter elements instead of fuse or build up heavier elements.

Just what "fuel" or material is fused is not known, but it may be the heavier kinds of hydrogen, deuterium of mass two and tritium of mass three. These may be combined with lithium, a light metal, six or seven times as heavy as hydrogen, which theoretically should fuse with release of energy.

If we do not know just what the H-bomb contains, we do know that it produces a tremendous explosion and can spread its products over a 7,000 square-mile area, to accept the probably conservative AEC statement. These products or fall-out are intensely radioactive debris of the explosion that will give people in the area doses of radiation that would sicken or kill them.

Inspired by the emphasis of the recent AEC report on fall-out debris that most logically can originate in fission of heavier uranium elements, the suggestion has been made that the 1954 blast was that of a fission-fusion bomb around which was wrapped more uranium. The outer coating is speculated to be natural uranium, mostly the isotope 238, which does not fission when hit by slow neutrons, which are the atomic particles that trigger the A-bomb.

Perhaps fast neutrons would come from the H-bomb in such profusion that the uranium 238, the most common sort, will fission under these conditions, although it has been known that high-speed neutrons could be absorbed by uranium without any nuclear reaction taking place.

It is known that there are three heavy elements that are fissionable. One of these is uranium isotope 235 which is contained in small amount in natural uranium and which is separated from it by expensive extraction processes. This was the original A-bomb material.

Then there is the man-made element plutonium which is made from the more plentiful uranium 238 by a "breeder" reaction in which neutrons from slow-fissioning material change the 238 isotope into plutonium. This is done at the immense plant at Hanford, Wash.

The much more plentiful element, thorium, can in a similar way be transmuted into uranium 233, which is fissionable.

Such conversion of naturally non-fissioning uranium into plutonium might take place at great speed under the intense heat of the fusion H-bomb. Then the plutonium would immediately fission, adding to the explosion and providing the debris or "fall-out" that is so properly feared.

Just as logically the 1954 explosion may have been a thorium bomb, in which this element was provided as a sort of wrap-around to be turned into uranium 233 which then fissioned.

These speculative natural uranium and thorium additives to H-bombs are different from the cobalt bomb speculation of some years ago, because the uranium and thorium would add to the explosion, while cobalt added presumably would only become intensely and lingeringly radioactive.

The Russians and the British have solved the mystery of at least one or more of the H-bombs. Perhaps the first technical information will come from outside the United States, released for propaganda purposes. Those who can still speculate, minds unsealed by Q-clearances, can at best only project past knowledge into the secretive present and future.

Science News Letter, March 19, 1955

ELECTRONICS

Tiny High-Speed "Brain" To Fly With Pilots

► A TUBELESS electronic "brain" to help Air Force pilots make split second decisions has been developed, it has been revealed.

The tiny, all-transistor computer that can perform its high speed calculations during supersonic flight might be used to flash out solutions to gunnery, bombing or navigation problems.

Developed by Bell Telephone Laboratories, the digital computer, called TRADIC (TRansistor-DIgital Computer), is expected to take up less than three cubic feet of critical aircraft space and will run on only about 100 watts of electricity.

AERBORNE COMPUTER — Bell Telephone Laboratories' new tubeless electronic "brain," part of which is shown in the background, needs about the same amount of power for operation as the ordinary 100-watt bulb held by engineer E. F. Allgeyer. The device uses transistors instead of vacuum tubes.

Eight hundred transistors, first cousins to the crystals in the old "cat whisker" radios, are used in the device instead of vacuum tubes. The computer, which also contains about 11,000 germanium diodes for circuit-switching, is believed to be the first all-transistor "brain" designed for airplanes.

The device can perform 60,000 additions or 3,000 multiplications a second and can handle as many as thirteen 16-digit numbers at a time. It is faster than the National Bureau of Standards' most modern digital computer, DYSEAC. The transistor calculator, however, can only solve a specific set of problems and has very little memory capacity.

One of the main advantages of transistors in "brains" is that they give off an insignificant amount of heat in comparison to vacuum tubes with their red-hot filaments. When DYSEAC, for instance, works on a problem, it generates so much heat that a refrigerating unit with the cooling capacity of 12 tons of ice a day must be used to keep the temperature down.

Plug-in units that look like small breadboards give TRADIC its mathematical instructions, while specific numbers are inserted into the circuits with simple switches.

Answers to trigonometric problems are flashed graphically on an oscilloscope screen, similar to the common television tube.

Science News Letter, March 19, 1955

The Atomic Energy Commission will help private industry in the commercial development of a portable *X-ray* unit that uses radioactive thulium.

MEDICINE

May Cure Mental Disease

If disturbance in the balance of stop-and-go chemicals at nerve junctions is cause of mental disease, its conquest may be possible due to recent studies with nerve gas.

➤ THE CONQUEST of mental disease may be the peaceful by-product of nerve gas study at the Army Chemical Center, Maryland.

Better treatment for nerve gas victims is also likely from new knowledge of chemical secrets of mental disease. One possibility is that too much hormone chemical, serotonin, may cause mental disease.

Disturbance in the balance of stop-and-go chemicals at nerve junctions in the brain is the basic mechanism in mental disease, Drs. Amedeo S. Marrazzi and E. Ross Hart of the Army Chemical Center believe on the basis of their studies.

If this theory proves correct, cure of mental disease or at least control of the symptoms (as diabetes is controlled by insulin) would be possible by chemical treatment. The stop-and-go chemicals involved are ones Army Chemical Center scientists have studied extensively in connection with nerve gas poisoning. Dr. Marrazzi thinks he and fellow scientsts know so much about them that they could find the right chemical to control mental disease.

The stop-and-go chemicals are known to scientists as adrenergic and cholinergic chemicals. Adrenergic chemicals inhibit, or stop, transmission of nerve impulses across the nerve junctions called synapses. Cholinergic chemicals excite, or give the go signal, to such impulses.

Grown people act the way they do, controlling rage and fear and other primitive reactions, because of a lot of restrictions that have been acquired through education. The restrictions presumably work through the stop chemicals. If something removes the restricting influence, such as too much alcohol, the normally well-behaved grown person may "act silly," Dr. Marrazzi explained. In the extreme case of socially unacceptable behavior, the person is in lay terms crazy, or mentally deranged.

In such a case, instead of alcohol, some other chemical presumably has counteracted the stop chemical in the brain, so it can no longer exert its restricting influence at nerve junctions. Uninhibited or "crazy" acts and reactions may follow. The chemical that blocks the restricting influence may get into the brain from the outside or it may be formed in the brain through some defect in body chemistry.

The trouble may come if there is an excess of a hormone chemical, serotonin, which is normally present in the brain. Both too little and too much serotonin have been suggested as the underlying trouble in mental disease.

Serotonin has a chemical structure something like LSD-25, a chemical that can produce hallucinations and other symptoms of mental disease in normal persons. In cats serotonin, LSD-25, mescaline and adrenaline all stop nerve impulses across a special nerve junction in the brain, Drs. Marrazzi and Hart found. Mescaline also brings on hallucinations in normal persons.

Serotonin, however, is about six to eight times as potent as LSD-25 and 25 to 30 times as potent as adrenaline in stopping the nerve impulses. This last finding makes the Army Chemical Center scientists favor the idea that an excess of serotonin in the brain may be the underlying cause of mental disease.

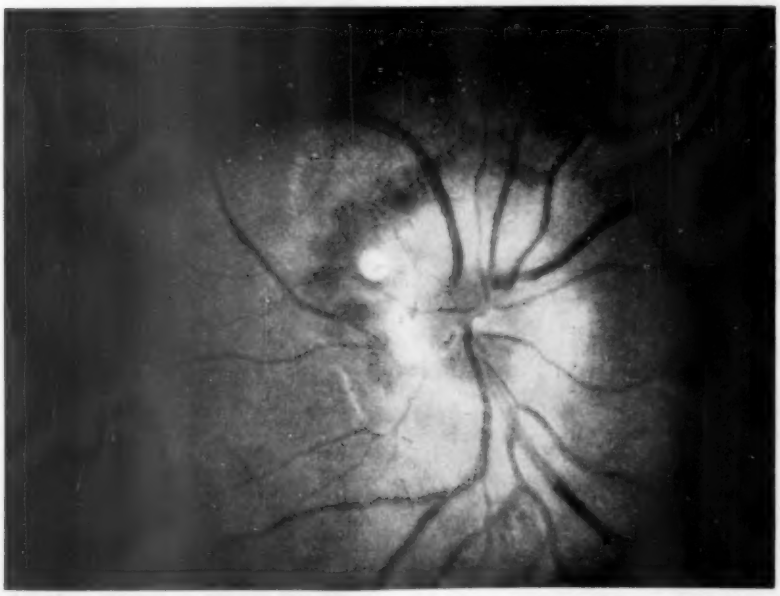
Some parts of the brain may be more sensitive than others to change in the balance of stop-and-go chemicals, Dr. Marrazzi pointed out. A change in the balance at that place might show up first or the mental disease process might start there and then become general over the brain.

Right now the Army Chemical Center scientists are testing their theory of the cause of mental disease in three ways: 1. They are experimenting with transmission of nerve impulses over more nerve junctions in the brain. 2. They are trying more chemicals. 3. They are experimenting with humans to see whether the chemicals affect nerve impulses in human brains as they do in cats.

Serotonin, suggested as a possible mental disease remedy on the theory that a deficiency of it led to mental disease, has already been tested in schizophrenic patients. It failed to help them, which strengthens the theory that the fault may be too much rather than too little of this chemical.

The two best chemicals for mental disease at present seem to be chlorpromazine and reserpine, Dr. Marrazzi said. These are not cures, but they are quite successful in controlling anxiety which is a fundamental symptom in mental disease. They act like sedatives in that they quiet the patient, but unlike sedatives, they do not put him to sleep.

The cat studies are reported in *Science* (March 11).



***LOOKING INTO EYE**—This picture of the inside of a hemorrhaged eye was taken with a new lighting and camera technique developed at Ohio State University. The hemorrhage shows up around the center of the photograph as an irregular darkened area. The university's setup has been used to observe the progress of nevi, usually benign pigmented conditions, ocular changes resulting from aging and the influence of heredity on the eye.*

• RADIO

Saturday, March 26, 1955, 5:00-5:15 p.m. EST

"Adventures in Science" with Watson Davis, director of Science Service, over the CBS Radio Network. Check your local CBS station.

Dr. Maria Telkes, project director of Solar Energy Projects, Engineering Research Division, New York University, New York City, will discuss "Using the Sun."

PUBLIC SAFETY

Urge UN Radiation Study

Group would analyze fall-out from explosions, collect data on biological and genetic effects of the radioactive clouds, and recommend procedures to prevent passing danger point.

➤ A UNITED Nations Commission to study the mounting threat to mankind from radiation spewed into the air by atomic and hydrogen bomb tests was urged by the Federation of American Scientists.

Effects of nuclear explosions present a common danger not restricted by national boundaries, the Federation pointed out. Its proposal for an international scientific commission to study radiation dangers was presented both to the State Department and to the chief United States delegate to the UN, Henry Cabot Lodge Jr.

After investigating the problem of radioactive contamination, particularly fall-out, resulting from bomb tests, and the radiation intensities produced, the commission would evaluate scientific opinion on the biological and genetic effects of radiation on humans. It would then establish an agreed danger threshold. Results of the Commission's studies as well as its recommendations for procedures to avoid exceeding the danger mark would be reported to the UN's General Assembly.

The U. S. would do "much to counter the bad propaganda results of past tests" by being the first nation to make such a proposal, Federation chairman M. Stanley Livingston, professor of physics at Massachusetts Institute of Technology, said. In presenting its plan for a UN commission, the U. S. should also offer to make available information on radiation measurements and biological effects as well as any instruments or facilities needed to get more data.

This offer would be similar to the U. S. gift of fissionable materials in the Atomic Pool plan, the Federation said. It would counter the propaganda setback the United States has suffered in world opinion, particularly among Asian nations, because of the radiation injuries to Japanese fishermen on the Fukuryu Maru 90 miles from the Bikini H-bomb test of March 1, 1954.

The Federation, a group of scientists formed in 1945, is concerned with the political implications of scientific developments. It was known as the "league of frightened men" because of its efforts after Hiroshima to control the destructive potential of the atom. Dr. Livingston pointed out that recent events have shown that the Federation's fright only came earlier than the fright others are now starting to show.

The A-bomb explosion at Hiroshima is now dwarfed by the fury of thermonuclear explosions, which may be leading to the day when all the world is a laboratory and all living things the experimental objects. The possibility of long-term damage to the human race through a general world-wide increase of atmospheric contamination is an international issue, the Federation said.

If Russia made the proposal for a UN study commission before the U. S. did, Dr. Livingston pointed out, the U. S. would be forced to cooperate to avoid the charge by other nations that military weapons development was being put ahead of the health and safety of other peoples.

Science News Letter, March 19, 1955

METEOROLOGY

To Spy on Tornadoes

➤ A FOUR-PRONGED spy system to keep track of tornadoes and to develop more accurate warning predictions is being proposed by meteorologists for the 1955 "twister" season, now swinging into its annual spring peak.

Flying airplanes into the squall lines where tornadoes are born, setting up ground equipment in a dense network, more radar sets searching for storm areas and more upper air observations are the four methods.

Tornadoes appear and disappear so fast that little is known about how they are triggered, although the general atmospheric conditions required to spawn them have been understood for some time. (See SNL, March 12, p. 170.)

Instant communication with stations on all sides of the squall lines so that these 100-mile storm fronts can be tracked, both visually and photographically, minute-to-minute, is also being planned.

Ground observations in a close network have yielded some information about these lines. A sudden rise in barometric pressure, for instance, always accompanies squall lines. If air observations could also be made in as close a network, meteorologists believe they might learn the exact factors required for tornado formation.

The four special research methods are necessary because the usual Weather Bureau recording stations are 100 miles or so apart. Since squall lines average about 100 miles long, only by much closer spacing of radar, recording instruments and photographic equipment can weathermen find out what is actually going on inside the stormy area.

Financing the four-pronged project would cost about $5,000,000, it is estimated. Meteorologists are hoping that Congress will pass a special appropriation for this life- and dollar-saving program in time for research to start this year.

If a tornado develops in one of the squall lines that has been thoroughly probed, meteorologists believe they could detect in their records the factors that made the tornado-bearing squall line differ from those in which no "twisters" occurred.

Science News Letter, March 19, 1955

The death rate from motor vehicle *accidents* in the United States dropped to 14.6 per 100,000 of the population in 1954, the lowest rate since 1949.

SCIENCE NEWS LETTER

VOL. 67 MARCH 19, 1955 NO. 12

The Weekly Summary of Current Science, published every Saturday by SCIENCE SERVICE, Inc., 1719 N St., N. W., Washington 6, D. C., NOrth 7-2255. Edited by WATSON DAVIS.

Subscription rates: 1 yr., $5.50; 2 yrs., $10.00; 3 yrs., $14.50; single copy, 15 cents, more than six months old, 25 cents. No charge for foreign postage.

Change of address: Three weeks notice is required. When ordering a change please state exactly how magazine is now addressed. Your new address should include postal zone number if you have one.

Copyright, 1955, by Science Service, Inc. Republication of any portion of SCIENCE NEWS LETTER is strictly prohibited. Newspapers, magazines and other publications are invited to avail themselves of the numerous syndicate services issued by Science Service. Science Service also publishes CHEMISTRY (monthly) and THINGS of Science (monthly).

Printed in U. S. A. Entered as second class matter at the post office at Washington, D. C., under the act of March 3, 1879. Acceptance for mailing at the special rate of postage provided for by Sec. 34.40, P. L. and R., 1948 Edition, paragraph (d) (act of February 28, 1925; 39 U. S. Code 283), authorized February 28, 1950. Established in mimeographed form March 18, 1922. Title registered as trademark, U. S. and Canadian Patent Offices. Indexed in Reader's Guide to Periodical Literature, Abridged Guide, and the Engineering Index.

Member Audit Bureau of Circulation. Advertising Representatives: Howland and Howland, Inc., 1 E. 54th St., New York 22, ELdorado 5-5666, and 435 N. Michigan Ave., Chicago 11, SUperior 7-6048.

SCIENCE SERVICE

The Institution for the Popularization of Science organized 1921 as a non-profit corporation.

Board of Trustees — Nominated by the American Association for the Advancement of Science: Karl Lark-Horovitz, Purdue University; Kirtley F. Mather, Harvard University; Paul B. Sears, Yale University. Nominated by the National Academy of Sciences: Homer W. Smith, New York University; Edward U. Condon, Berkeley, Calif.; Harlow Shapley, Harvard College Observatory. Nominated by the National Research Council: Duane Roller, Los Angeles, Calif.; Ross G. Harrison, Yale University; Leonard Carmichael, Smithsonian Institution. Nominated by the Journalistic Profession: Neil H. Swanson, Baltimore, Md.; O. W. Riegel, Washington and Lee University; Michael A. Gorman, Flint Journal. Nominated by the Scripps Estate: Charles E. Scripps, Cincinnati, Ohio; Edward J. Meeman, Memphis Press-Scimitar; John T. O'Rourke, Washington Daily News.

Officers — President: Leonard Carmichael; Vice President and Chairman of Executive Committee: Charles E. Scripps; Treasurer: O. W. Riegel; Secretary: Watson Davis.

Staff — Director: Watson Davis. Writers: Jane Stafford, Marjorie Van de Water, Ann Ewing, Howard Simons, Edward Housman. Science Clubs of America: Joseph H. Kraus, Margaret E. Patterson. Photography: Fremont Davis. Sales and Advertising: Hallie Jenkins. Production: Priscilla Howe. Interlingua Division in New York: Alexander Gode, Hugh E. Blair, 80 E. 11th St., GRamercy 3-5410.

TECHNOLOGY

No Takers for UN Rubles

A three-year accumulation of Russian funds for technical assistance to underdeveloped countries can find no open palms on this side of the Iron Curtain.

➤ THE UNITED Nations has $3,000,000 to give away, but has been having trouble finding takers.

The money is a three-year accumulation of Russian rubles contributed by the Soviet Union to the UN technical assistance program to aid underdeveloped countries. The problem up to the present is that no country this side of the Iron Curtain has wanted to deal with Russian rubles, equipment or technicians.

Some of the Russian money may be used to buy Russian equipment and supplies for recipient nations during 1955. This comes at a time when the House of Representatives Appropriations Committee is currently debating the United States' contribution to the UN's "point four" program.

UN's point four receives contributions from member nations. An underdeveloped nation can then request aid in any or all of three ways: technical experts from the contributor nation, sending students to the contributor nation for technical studies, and/or purchasing supplies and equipment from the donor nation.

For the first two or three years of the technical help program, the Russians took a dim and hostile view of the UN's point four, branding it a tool of Western imperialism. In 1953, Russia reversed its stand and pledged 4,000,000 rubles or approximately $1,000,000 to the program. This was followed by similar pledges of 4,000,000 rubles in 1954 and again this year.

Countries have heretofore been reluctant to accept the Russian contribution for several reasons: One is that the aid is in rubles, which are not as convertible as dollars or pounds and would find their greatest use behind the Iron Curtain. Asking for part of the Russian money would mean paying Soviet experts in rubles, buying Russian DDT, farm machinery or audio-visual equipment, or sending students to Russia for technical courses or trips.

Some nations evidently have doubts as to the quality of Russian equipment and doubts regarding the spare parts problem. Others fear that acceptance of Russian equipment will necessitate teams of Russian technicians to accompany or follow the equipment for installation and servicing.

It is understood that some countries will ask for the help this year and that it will be more than 90% for technical equipment and supplies. Very little use of Russian rubles is foreseen for inviting Russian technicians and experts to the countries, or sending study groups to Russia.

In the past, the United States has contributed better than 50% of the support of the UN's technical assistance program, contributing $13,800,000 in 1954. Last year, however, the Congress did not appropriate money for the program and expressly asked the President to refrain from making a pledge until the appropriation was passed.

Recently, President Eisenhower sent an emergency request for $8,000,000 to the House for one-half of our projected 1955 contribution to the UN technical assistance program. Delay of the contribution has already caused planning to be delayed.

Science News Letter, March 19, 1955

ELECTRONICS

Liquid That Acts Like Semiconductor Found

➤ A LIQUID that conducts electricity by electrons as though it were wire has been discovered. This puts liquid for the first time in the same class in its handling of electricity as solid semiconductors, germanium and silicon, used in the wonderful transistor that is replacing vacuum tubes.

This achievement of Drs. G. M. Pound and Gerhard Derge of the Carnegie Institute of Technology shows that molten metallic sulfides conduct electricity by flow of electrons instead of by transport of charged atoms. This is what happens in ordinary metals. In the metallic sulfides the conductance increased with temperature, which is the reverse of ordinary metals.

Science News Letter, March 19, 1955

PSYCHOLOGY

Scientists Found to Be Good Judges of People

➤ PHYSICAL SCIENTISTS are good judges of people, but training in psychology is not an advantage. These are some of the conclusions made by Dr. Ronald Taft, of the University of Western Australia, on the basis of a review of over 80 researches made in this field.

Dr. Taft's review of published material on judgment of people was made when he was doing research at the Institute of Personality Assessment of the University of California.

These are the things that make a good judge of people, according to Dr. Taft's article appearing in the *Psychological Bulletin* (Jan.).

1. Age (This applies to children only. In adults, it apparently helps to be somewhere near the age of the individual being judged.)
2. High intelligence and academic ability.
3. Specialization in the physicial sciences.
4. Talent in music, art and writing, and dramatic ability.
5. Knowledge of self and of the standing of self in comparison with others on various traits.
6. Good emotional adjustment.
7. Social skill. This seems to help only with predictions of how another person will act under given circumstances.

The following traits, Dr. Taft found, make poor judges of people:

1. A tendency to be neurotic or psychotic. (Such a person has a tendency to see his own weaknesses in others.)
2. Social dependence.

Training in psychology was found to be neither a help nor a hindrance in judging people. Neither men nor women are superior judges of people.

Science News Letter, March 19, 1955

MEDICINE

Diabetes Risk Figured

➤ THE RISK of inheriting susceptibility to diabetes can now be calculated, Dr. Arthur G. Steinberg of the Children's Cancer Research Foundation, Boston, reports to *Eugenics Quarterly* (March).

About five percent of the population is susceptible, Dr. Steinberg figures, assuming that liability to diabetes is inherited via a simple recessive gene. When individuals get this gene in a double dose, they are genetically liable to the disease.

If both your parents have diabetes, then you and all your brothers and sisters will inherit susceptibility to the disease, according to tables compiled by Dr. Steinberg from investigations of family histories. The more distantly you are connected with your diabetic relatives, the less chance you have of acquiring the disease, since heredity is recognized as its basis. If only an uncle or aunt or first cousin has diabetes, then you run only a 20% risk of being genetically liable.

Diabetes is about twice as frequent among brothers and sisters of diabetic patients who have a diabetic parent as among brothers and sisters of such patients with unaffected parents, Dr. Steinberg concludes after studying large numbers of family histories. If a parent and a brother or sister of the non-diabetic parent have the disease, you run a 50% to 80% chance of inheriting susceptibility. If a diabetic has non-diabetic parents, then only one-fourth of the patient's brothers and sisters will be susceptible.

At the present time there is no method of predicting when a person who is genetically liable to diabetes will become diabetic.

Science News Letter, March 19, 1955

PSYCHOLOGY

Study Science Interest

➤ WHAT MAKES a child suddenly announce: "I want to be a scientist!"

Is it an influence at home or school? Is it a talk with a friend, or a gift of scientific equipment? Is it a science club or just a personal drive?

It can be any one or all of them, and perhaps none of them.

This seeming paradox turned up in the answers to a questionnaire sent to the 95 finalists of the 1954 National Science Fair, conducted by SCIENCE SERVICE's Science Clubs of America.

The young scientists were asked: "What or who sparked your first interest in science, and how?"

Of the 79 teen-age finalists who answered the question, 36.7% gave credit to schools and their teachers for triggering their first interest in the world of chemistry, biology, physics, or other specialties.

The next greatest source of inspiration, as expressed by these young scientists, was home influence. Father turned out to be much more influential than he usually gives himself credit for being.

"My father," one youngster wrote, "would ask me questions and try to get me to argue on certain points, such as an object being every color except as it appears."

But father was by no means the only family influencer, knowingly or not.

"My older brother had been interested in astronomy but dropped it," another finalist said, "I read all of his books and began where he left off."

Giving a chemistry set can do the trick, too, the report shows. At least four of the teen-agers questioned replied that their first interest was sparked by such a gift.

Others credited magazine articles and science clubs. One wrote:

"The meteor shower, 1945, started my interest. I was not satisfied with merely seeing it. I wanted to know what was occurring and why, so I went to the public library and checked out some books on astronomy, then physics, then mathematics and, from there, well, you probably know how science just 'grows' on a person."

Science Clubs of America, sponsoring organization of the National Science Fair, is administered by SCIENCE SERVICE. The 1955 National Science Fair is to be held at the Case Institute of Technology and Western Reserve University, Cleveland, Ohio, May 12 to 14. A record number of finalists representing local fairs from coast to coast is expected to attend the national event.

Science News Letter, March 19, 1955

AN EASY LIFE — Prof. S. Dillon Ripley 2d of Yale University, shows a specimen of the frog mouth, a rare bird from the South Pacific that doesn't have to sing for its supper. It merely sits quietly on the ground in the shadowy jungle and opens its mouth. Attracted by the bird's colorful palate, insects fly in. The frog mouth is one of the birds brought to Yale's Peabody Museum by Prof. Ripley, who recently returned from a five-month expedition to Indonesia.

NUTRITION

Irradiated Food Harmful?

➤ FOOD STERILIZED by atomic radiation for preservation might be harmful to eat, two Massachusetts Institute of Technology scientists reported to the American Chemical Society in Washington.

Possible subtle changes in a relatively few molecules of a food or drug subjected to radiation could result in products that are harmful to the consumer, Samuel A. Goldblith and Dr. Bernard E. Proctor of MIT's department of food technology warned. The scientists issued their warning in the form of a question aimed at agencies concerned with public health.

Irradiation is known to cause a change in the molecular composition of food. Just how much of a change, the scientists claimed, has been impossible to determine because modern analytical measurements are limited. However, the change has been evidenced in a distinct difference in flavor and odor of food before and after radiation.

Reviewing the present status and problems of radiation preservation of foods and drugs in the society's journal, *Agricultural and Food Chemistry* (March), the Massachusetts scientists said that the biggest problem facing commercial use of radiation is eliminating the production of undesirable side effects.

These unwanted by-products such as a change in taste, texture, odor and color come about when the food is bombarded at dose levels needed to bring about complete sterilization.

Three methods have been found to be potentially effective at getting rid of the side reactions, they are: irradiating when the food is frozen, removing oxygen from the process and/or adding free-radical acceptors that block the action producing the changes.

Although complete sterilization of foods presents several problems, the food technologists pointed out that subjecting foods and drugs to lesser doses of atomic radiation, which could roughly be compared to pasteurization, are feasible.

These uses for temporary preservation are:

1. Reducing the surface contamination of foods such as hot dogs to increase their shelf life.
2. Increasing the shelf life of meats fivefold with low doses of gamma radiation.
3. Deinfesting cereals of injurious insects.
4. Inhibiting sprouting of potatoes, thereby increasing storage life by many months.
5. Sterilizing pharmaceuticals.

Science News Letter, March 19, 1955

The dollar value of farm *woodland products* has increased sevenfold since 1940, and they now bring farmers $700,000,000 a year.

PUBLIC HEALTH

Leukemia Showing Up In A-Bomb Survivors

➤ LEUKEMIA, ALWAYS fatal cancer of the blood, is showing up in survivors of the world's first military atom bombing.

Of Hiroshima survivors who were within the first thousand meters of the explosion, 15 have developed leukemia within the past five to seven years. One of these was among the survivors who showed minor symptoms. The other 14 were among 750 survivors who showed major signs of radiation damage such as loss of hair. This last gives a very greatly increased incidence, for leukemia, of one in 53.

Another 500 meters out, the leukemia rate among survivors changes to one in 150 who showed symptoms of radiation damage and one in 917 of survivors without symptoms.

These are among findings by Drs. William C. Moloney and Marvin Kastenbaum for the Atom Bomb Casualty Commission. Dr. Moloney was medical director for two years but is now at Tufts College Medical School and Boston City Hospital, Boston. Dr. Kastenbaum is now at the University of North Carolina, Chapel Hill, N. C.

Science News Letter, March 19, 1955

PUBLIC HEALTH

Nuclear Plant Hazards

Nuclear reactors are explosive machines, expert points out, and are more dangerous than any industrial machine in current use. Lists four perils.

➤ A WARNING against the hazards of nuclear power plants was sounded by Dr. George Weil, technical director for U. S. participation in the United Nations Atomic Pool plan and a physicist in the Atomic Energy Commission's reactor development program until 1952.

Dr. Weil believes that nuclear power facilities can be successfully operated, but that discussion of the possible dangers has been limited "almost exclusively to technical meetings and publications," whereas the benefits have been widely publicized.

Reactors, Dr. Weil pointed out, are not only expensive machines, they are substantially more hazardous than any industrial machines in current use. Their operation requires a great degree of caution and control, and those in charge of designing and building them "must make the most pessimistic assumptions" concerning potential accidents and their consequences.

Three principal considerations must be weighed to establish a realistic overall perspective of the industrial hazards, Dr. Weil concluded. He listed these in *Science* (March 4) as follows:

1. The types of accidents that can occur and the extent of property damage and personal injury that may be involved.
2. The chances that accidents will occur.
3. The positive benefits that may be balanced against such risks.

The two main characteristics making a nuclear power plant hazardous are the contained radioactive materials, fission products and some types of fuel used, and the more than critical amount of fissionable material that may be within the plant.

The risks of combining these two ingredients under one roof, Dr. Weil says, can be compared to large-scale production of both highly poisonous gas and explosives in the same plant.

A nuclear power plant has a built-in capacity for self-destruction in a fraction of a second, Dr. Weil pointed out. The greatest possible danger from such a run-away accident would include:

1. Destruction of the reactor part of the plant beyond repair.
2. Radioactive contamination, beyond hope of salvage, of the building housing the reactor and measuring equipment.
3. Persons killed and injured by the blast.
4. Fall-out of radioactive material from the blast cloud.

Precautionary measures in plant design, location and operation, Dr. Weil said, would reduce these hazards, but would increase costs considerably.

Only with basic understanding of any process can effective steps be taken to minimize risks, Dr. Weil concluded, and the 12 years of "safe activities with many types of reactors is convincing testimony" that reactor technology is understood.

Science News Letter, March 19, 1955

MEDICINE

Men Are "Sicklier" Hospital Figures Show

➤ THE MALE sex is the "sicklier," hospital figures gathered in an American Medical Association survey seem to show.

In spite of the fact that one-sixth of all persons admitted to hospitals in one year were pregnant women, there are more men than women hospitalized.

On one day in 1953 there were 1,206,592 persons in 6,539 of the nation's 6,840 registered hospitals. This included 642,156 men and 564,436 women.

Even in the childbearing years of life, between 15 and 44, men exceeded women in hospitals by 13,000. At ages 45 to 64 the excess was over 51,000, but after 65 it dropped to 2,000.

Accidents and occupational diseases might account for some of the male excess in hospitals, but would hardly account for the fact that there were 11,300 more males than females under 15 years old in hospitals, the A.M.A.'s Dr. Frank G. Dickinson pointed out.

Men in Veterans Administration hospitals and other federal hospitals made up much of the excess, apparently.

Science News Letter, March 19, 1955

TECHNOLOGY

First Paper Made From Synthetic Fibers

➤ PAPER WITH up to ten times the strength and 200 times the folding resistance of conventional sheets has been produced for the first time from nylon and other synthetic fibers.

The paper, which tests show could be produced commercially, is also resistant to corrosive chemicals, mold, bacteria, light and moisture. Such properties would make the product ideal for heavy duty bags, chemical packages, file cards and record stock.

Development of the experimental paper was disclosed by Dr. Robert A. A. Hentschel of the Textile Fibers Department of E. I. Du Pont de Nemours and Co. Inc., Wilmington, Del., to the Technical Association of the Pulp and Paper Industry.

Science News Letter, March 19, 1955

ELECTRONICS

"Surplus" Radar Waves Now Used Against Smog

➤ "SURPLUS" WORLD War II radar waves, which never proved useful in detecting Nazi or Japanese planes, are being employed successfully against a peacetime foe.

These microwaves are being used by Dr. W. D. Hershberger, professor of engineering at the University of California at Los Angeles, in an effort to "put the finger" on the chemical culprits responsible for the damaging effects of smog.

Certain gaseous chemical compounds thought to be associated with smog are known to absorb some of these waves. Thus wave absorption patterns may serve as "fingerprints" to help identify the guilty compounds.

Smog is being trapped in tiny capsules and subjected to a thorough laboratory scrutiny by "radar sleuths" in the first phase of the study.

In the second phase the Los Angeles basin will serve as a laboratory. Microwaves will be beamed across the basin from appropriate stations to special receiving instruments on top of the U.C.L.A. engineering building.

Absorption patterns recorded by the instruments may thus give clues as to the identity of members of the smog gang that at times make life miserable and may endanger health in Los Angeles.

Science News Letter, March 19, 1955

LIGHTNING SHIELD—This lens-shaped steel tank, as part of one of the world's largest oil circuit breakers, will tame surges of electricity caused by lightning. Electric arcs during momentary interruption of flow of current are almost as hot as a nuclear explosion. The device is being manufactured in General Electric's High-Voltage Switchgear Department in Philadelphia.

GENERAL SCIENCE

Blacktop Areas Are Avoided by Motorists

➤ DO YOU swerve toward the center of the highway when roadside objects loom up? Do you try to avoid blacktop stretches on a concrete highway?

If you are an average motorist you do, research by Dr. Harry Case, Robert Brenner and Slade Hulbert of the Institute of Transportation and Traffic Engineering at the University of California at Los Angeles has indicated.

In one highway study a large black panel, whose size could be changed, was set up alongside the road at various distances from the road's edge. Motion pictures of passing motorists' reactions showed that they tended to swerve toward the center of the highway about 110 feet away from the object.

In another study motorists' reactions were photographed on a stretch where a three-lane concrete highway was widened by adding a blacktop lane. It was found that the majority of motorists avoided the blacktop lane and some even swerved across the center of the highway upon encountering it.

It was concluded that highway engineers should consider this "barrier effect" in design of approaches to bridge abutments and other roadside structures and in the use of blacktop on concrete highways.

Science News Letter, March 19, 1955

PUBLIC HEALTH

Smog-Forming Fall-Out Worries Scientists

➤ ANOTHER KIND of fall-out—not radioactive but potentially a killer—is now worrying scientists: the invisible rain of small particles around which smog forms.

Warnings of the threat to health from the fumes spewed into the atmosphere by modern man are such smog-caused disasters as those in Donora, Pa., in 1948 and London in 1952.

From home chimneys, from industrial smoke stacks, from millions of automobiles, thousands of tons of tiny particles and gases are thrown into the air every day. The result is danger of duplicating on a national scale what has happened locally in Los Angeles.

Most of the know-how for dealing with the smog problem within the United States is already available. The only way to keep smog from blackening more cities around the country in the future is to take counter measures now.

New industries going up should be so located and designed that they do not contribute to air pollution. The atmosphere is still the best and most efficient way to get rid of wastes, but it will work only if it is not overloaded with noxious fumes.

The idea is not to get rid of industries, but to learn how to live with a certain amount of pollution and to keep the contamination from reaching levels dangerous to health, in the opinion of scientists working on the problem.

They point out that cars are still being driven, although accidents have not been eliminated. A set of traffic lights, policemen and regulations for atmospheric pollution are now required, they say.

Much research on smog has already been done, including that by the federal government, and the important present need is action on a local level, since problems vary in different areas.

One way to encourage industrial cooperation is to give companies tax reductions for installing equipment cutting down their contamination of the air. Of the nearly 20 bills concerning air pollution submitted for Congressional action in this season, some bills would do this.

Others, such as S. 928, sponsored by the senators from Pennsylvania and California, where smog has become a problem, would provide for intensive research.

Science News Letter, March 19, 1955

MEDICINE

High Blood Pressure Runs in Families

➤ HIGH BLOOD pressure tends to run in families. For this reason, doctors can spot the man or woman likely to develop a serious form of the condition, by studying the family history.

These findings from a study of 799 persons over 40 years old are reported by Drs. Constance D'Alonzo, Allan J. Fleming and George H. Gehrmann of the E. I. duPont de Nemours and Co., Inc., Wilmington, Del., in the *Journal of the American Medical Association* (Feb. 19).

High blood pressure is more likely to occur in a person whose parents had disease of the heart and blood vessels than in one whose family had no history of such disease. It occurred most often when the mother had such disease.

The family history of the condition can help in job placement and should be used, the doctors said, to try to prevent or modify the condition.

Knowledge of family background could prevent turning down a job applicant because he seems at first to be a bad risk. As an example, the doctors told of three chemists they studied for 13 years. One was an "ideal" candidate physically, another might possibly have been turned down for high blood pressure, and a third was called the "riskiest" of the group. After 13 years, the "ideal" candidate had malignant hypertension (high blood pressure); the possible bad risk had shown no change, and the "riskiest" of the three showed normal blood pressure.

Family history revealed good health among the parents of the two riskier chemists, while high blood pressure appeared in the family of the apparently "ideal" candidate.

Science News Letter, March 19, 1955

IN SCIEN

MEDICINE

Radioactive Gold Used on 200 Patients

➤ MORE THAN 200 cancer patients have been given radioactive gold treatment at the Ohio State University Medical Center here during the past two years.

In some all evidence of the cancers has been wiped out. The patients cannot yet be called "cured," however, because cancer colonies may have established themselves throughout the body. Many of the patients who got the gold treatment have had recurrences and died of cancer that had spread through their bodies.

The radioactive gold treatment was pioneered by Dr. William G. Myers and his clinical associate, Dr. Ulrich K. Henschke. The gold is imbedded in six or seven or more feet of nylon thread and sewn through cancers that cannot be removed completely by operation.

A gram of radiogold, costing about $25, can irradiate tissues with the power that would be obtained from a $20,000 chunk of radium, the American Cancer Society which supports Dr. Myers' research, said. The radium, however, can be used for centuries, while gold has a half-life of 2.7 days and a useful life in irradiating cancer of little more than one week. One big advantage of radioactive gold is that the radiation dose can be controlled easily.

Science News Letter, March 19, 1955

MEDICINE

Navajo Indians Escape Heart Artery Trouble

➤ NAVAJO INDIANS escape the heart disease, coronary thrombosis, that kills nearly half a million persons in the United States each year.

No proved case of the disease was found among 10,267 admissions to the Navajo Medical Center general hospital at Fort Defiance, Ariz., during the period 1949-1952 inclusive, Dr. Jarvey Gilbert, now of Burbank, Calif., found in a study while he was practicing medicine on the Navajo Indian Reservation.

At St. Joseph's Hospital, Albuquerque, N. Mex., about 150 miles from Fort Defiance, there were during the same period 146 cases of coronary thrombosis among 20,289 admissions.

Why the Navajos escape this heart disease is not known. Dr. Gilbert thinks it is a matter of constitution or heredity.

He reported his findings to a joint meeting of the California Medical Association and the California Heart Association.

Science News Letter, March 5, 1955

CE FIELDS

PSYCHOLOGY

Natural Leader Is Also Preferred as Follower

➤ THE OLD saying that to be a good leader you must be a good follower has received scientific confirmation in a study made by Dr. E. P. Hollander of the Carnegie Institute of Technology and Dr. Wilse B. Webb of the U. S. Naval School of Aviation Medicine.

The study, reported in the *Journal of Abnormal and Social Psychology* (March), was of the choices made by 187 Naval Aviation Cadets of associates they would want to lead them on an "undisclosed mission" and those each cadet would want as a part of his unit, assuming that he was the leader. In addition, each cadet was asked to name his three best friends.

The choices for leaders did not turn out to be just a "popularity contest," the investigators found. In fact, an average of more than two out of three of the "best friends" failed to rate as chosen leaders.

Friendship seemed to have a little more to do with the choices made as followers than it did in the picking of leaders, but followers as well as leaders were chosen for their capability rather than for being a "good fellow."

The investigators also compared the choices of followers made by the cadets named most often as preferred leaders with the choices of those not picked as leaders. Being a preferred leader seemed to make no particular difference in picking followers.

The old military idea that those men who do not make good as leaders can be thrown into the ranks as followers and will succeed in the role of taking orders must be reconsidered, the investigators conclude.

Science News Letter, March 19, 1955

ASTRONOMY

Jupiter's Lost Moon Rediscovered by 100-Inch

➤ JUPITER'S LOST moon has been rediscovered with the 100-inch telescope at Mount Wilson, Calif., after a giant electronic "brain" computed where it should be. It was last seen in 1942.

Dr. Paul Herget, director of the Cincinnati Observatory, Cincinnati, Ohio, said the electronic computer pinpointed its location in 20 minutes.

The moon, number VIII of Jupiter's known family of 12 satellites, was spotted with the 100-inch telescope very close to the place where the calculations showed it was supposed to be.

It was first discovered photographically in 1908 at the Royal Observatory, Greenwich, England. The eighth moon is very faint and believed to be about 30 miles in diameter. It is so far from Jupiter that its motion is greatly disturbed by the attraction of the sun. Sometimes it strays so far from Jupiter—20,000,000 miles—that the planet's gravitational pull is barely sufficient to keep it as a circling satellite.

This makes the computation of the moon's position extremely difficult. Dr. Herget, who keeps track of the wanderings of the minor planets or asteroids for the International Astronomical Union, put the problem on Remington Rand's electronic computer, UNIVAC, and its orbit was then calculated for the next 25 years.

The eighth moon's path through the heavens is remarkable because, along with three other satellites of Jupiter, it moves in a clockwise direction. This motion is known as retrograde, and is a direction opposite that of most objects in the solar system.

Jupiter is now the brightest celestial object, except the moon, in the evening sky. It can be seen high in the southern sky in the early evening. It is the fifth planet from the sun and the second outward from the earth. Jupiter has the largest diameter of any planet in the solar system. Whether its bulk or its mass is used as the measure, it is larger than all the other planets put together.

Science News Letter, March 19, 1955

PSYCHOLOGY

Introverts as Mentally Healthy as Extroverts

➤ THE OLD idea that the shy child who stood on the sidelines watching others play was headed for a mental institution needs to be revised or abandoned, it appears from studies reported by Drs. Carmen Miller and Don P. Morris and Miss Eleanor Soroker of the Southwestern Medical School, University of Texas, Dallas, at the meeting of the American Orthopsychiatric Association in Chicago.

The shy withdrawn child and his grown-up counterpart were at one time freely labelled "introvert" by parlor psychiatrists as well as professional ones. Parents of such a child were warned that he was likely to develop the serious mental sickness, schizophrenia. Patients with this disease are at times completely withdrawn from the world around them and give the picture of the very extreme of introversion.

The studies reported consisted of long-term follow-up investigations of little boys seen in a child guidance clinic.

"There is not adequate justification," the doctors reported, for the idea that children who might be classified as introverts are more likely to develop schizophrenia than children who are extroverts or between the two. Neither is there justification, the scientists said, for the idea that a large proportion of schizophrenics have introverted pre-psychotic personalities.

Science News Letter, March 19, 1955

MEDICINE

Urges Cancer Check for All Expectant Mothers

➤ EVERY EXPECTANT mother should be examined with the thought that she might have cancer, Dr. John I. Brewer, chairman of the department of obstetrics and gynecology, Northwestern University School of Medicine, Chicago, warned in the first Kellogg Lecture at George Washington University school of medicine, Washington, D. C.

Fortunately cancer does not occur often in pregnant women but tests for it should be made in all patients, Dr. Brewer said.

If cancer is present, proper and adequate treatment for it cannot be given without stopping the pregnancy unless the diagnosis is made late in pregnancy. Then a living baby can be obtained and the cancer then treated without harm to mother or baby.

Science News Letter, March 19, 1955

MEDICINE

Doctor's Visit Excites Fatal Heart Attack

➤ SIX CASES in which the doctor's visit killed the patient by bringing on a fatal heart attack were reported by Dr. Klaus A. J. Jarvinen, assistant physician-in-chief at the First Medical Clinic, University of Helsinki, Finland, to the *British Medical Journal* (Feb. 5).

All six were suffering from the heart trouble called myocardial infarction. They had all been in the hospital more than seven days but less than six weeks after the start of the heart trouble. Apparently the excitement of "ward rounds," in which doctor and nurse and sometimes several doctors and nurses visit patients, was too much for these six.

In two cases, the patients were recovering and expecting the doctor on that very round to give them the good news that they were well enough to go home. In two other cases, the patients always got excited during the doctor's visit. Three deaths occurred in connection with the visit of the physician-in-chief who made rounds only once or twice a week in each ward.

Dr. Jarvinen thinks the six deaths at the time of ward rounds by the doctors cannot be laid to coincidence. He points out that rest is fundamental in treatment of patients with this kind of heart disease and that the rest must be mental as well as physical.

To avoid putting the patient under mental stress, he advised doctors to be aware of the risk of death that may come from the excitement of their visit to the patient.

Nurses and other hospital personnel as well as doctors, he also advised, should not make ward rounds seem too important. Special care in making beds and extra speed in getting things in order on the day the physician-in-chief makes rounds may be enough to excite a patient so that by the time the doctor arrives the patient's mental stress puts a fatal strain on his heart.

Science News Letter, February 19, 1955

GENERAL SCIENCE

World Goes to the Fair

More than 50,000,000 persons will attend international trade fairs this year. For the first time in trade fair history, the United States will officially participate.

By HOWARD SIMONS

➤ THE WORLD is going to the fair this year, and for the first time, the United States is tagging along.

From the sun-parched streets of Addis Ababa in Ethiopia to the lush green boulevards of Bangkok in Thailand, more than 50,000,000 men, women and children will visit the 100 and more international trade fairs scheduled for 1955.

Many of those who will attend the fairs will be natives and visitors in the country in which the fair is being held, interested in seeing the industrial world on exhibit. Much as Americans did at the two World Fairs in 1939 in New York and San Francisco, these people will be curious to have a look at just about everything from an improved egg-beater to a completely furnished home.

A great many others will be businessmen, for whom the trade fairs are principally designed. Retailers, wholesalers and manufacturers from throughout the free and not-free world will be traveling from fair to fair buying, comparing and viewing.

It is impossible to estimate how many millions of dollars in orders are placed directly at the fairs, nor the millions more spent throughout the year as other orders and requests for industrial goods reach back to the country of manufacture.

For the first time in the centuries-old history of the international trade fair, the United States will be officially represented. Partially as a result of the "cold war," but more a desire to represent the United States through its industrial progress at home, the government will set up national exhibits at at least 25 fairs during the current year.

"Our participation is ten years late," Roy F. Williams, director of the newly created Office of International Trade Fairs of the U. S. Department of Commerce, said.

"We are using as our theme, 'Industry in the Service of Man,' and our participation is designed to correct misunderstanding or misrepresentation about our country's way of life."

Last year, the United States participated in the international fair at Bangkok, Thailand. In contrast, during 1954, the Russians exhibited products and maintained a national pavilion at 46 trade fairs. It is interesting to note that when the Russians learned that the United States was to enter an exhibit at the Bangkok fair, they completely withdrew. Thus, this year's $2,250,000 fair effort is a beginning answer to an admittedly highly subsidized, highly polished and highly effective Russian trade fair program.

Trade fairs have their roots deep in the dark ages of the European continent. Historians tell us that Sidonius Apollinasius spoke of trade fairs being held in Champagne and Brue in France in 427. Some of those that have survived are almost historical, such as the fair held at Frankfurt, Germany March 6 to 10. The Frankfurt fair is over 600 years old, and is the kickoff fair for the United States participation program.

Others, such as the First International Trade Fair at Tokyo to be held May 5 through 18 and in which this country will have a national pavilion, are quite new.

The United States has had nothing comparable to the great world trade fairs which have spread from Europe to all the continents of the globe. The United States has traditionally confined its exhibitions to the agricultural fairs.

BANGKOK FAIRGROUNDS—This aerial shot of part of the sprawling fairgrounds at Bangkok, Thailand, shows a view of the United States exhibition in the left foreground. The pilot project of a newly created American trade fair program, which will officially represent this country's industrial progress in at least 25 fairs during 1955, Cinerama, a balloon tower and the reflecting pool helped sell the United States at Bangkok last year.

A U. S. First

And this year will also mark the first international trade fair in the United States to equal the annual shows throughout the rest of the world. A group in New York City, known as International Trade Shows, have combined the New York export show and import show into the First New York International Trade Fair.

Exhibitors of heavy industrial products, fashions and consumer goods from other nations have been invited to attend. The New York fair is scheduled to be held at the Twenty-fifth Street Armory from May 15 through 19 this spring.

Although the trade fairs were designed and are reportedly held to stimulate world trade, to exhibit the latest in manufactured goods, and to show off the results of a nation's industrial, scientific and technological ingenuity and production, there is more and more evidence that they are also being used as a sparring arena for ideological propaganda.

The problem of a creeping nationalistic "we can do anything you can do better" has caused many fair managers and officials to deny countries the privilege of maintaining a national pavilion at the fairs, re-

stricting the exhibits to manufacturers' exhibits only.

The annual fairs have for the most part become permanent. The same buildings and sites are used from year to year. The fairs themselves are free of admission, with the income derived from the exhibitors who pay for space on a rental basis. Fees are high, in some cases, costing as much as $50,000 for setting up a national pavilion. To get space at a fair, it is not uncommon for a manufacturer to have to apply two years in advance.

As an example of the proportions international trade fairs have assumed, during two weeks in April, from the 12th to the 27th, Milan, Italy, will be conducting its 33rd annual International Samples Fair. Last year, 3,585 exhibitors, representing 50 nations, displayed more than 900,000 samplies. The display area given to the fair was 490,000 square yards, ranging along a frontage of 35 miles. More than 4,000,000 persons from 109 countries visited the Milan Fair.

As expressed by the Italian fair officials, "the great merit of the Milan Fair today is that it provides a commercial center for East and West, exercising a strongly stimulating effect on trade and a stage for launching every kind of novelty in the fields of discovery and production. It constitutes a gigantic window in which all countries, whatever their economic structure or political basis, may present the products of their labors, their skills and their versatility."

Not all the trade fairs are as large or as unlimited as the Milan samples fair. Some are specific in the goods allowed to be displayed, such as the Gastronomical Fair at Dijon in France, the German Toy Fair at Nurnberg, the International Sugar Exhibition at Amsterdam or the International Nautical Exhibition at Paris.

But regardless of their size or behind the scenes political grappling, the fairs enable man to display the fruits of his invention to the rest of the world, and "meet me in St. Louis, Louie, meet me at the fair" is now being sung from Leipzig behind the Iron Curtain to Sao Paulo south of the border in as many languages as trade fair countries.

Science News Letter, March 19, 1955

PHYSIOLOGY

Woman's Hand Has Seven Fingers But No Thumb

➤ WHEN POLICE in Houston, Tex., were fingerprinting a Negro woman after her arrest, they found that her left hand has no thumb. It has a normal little finger, ring finger and middle finger. The index finger is enlarged and has a double nail.

Where the thumb normally is placed, this woman has three extra fingers.

From the woman's left hand, police obtained a total of seven fingerprints.

A photograph of the unusual hand appears in the Finger Print and Identification Magazine.

Science News Letter, March 19, 1955

GEOLOGY

Volcanoes Made Diamonds

➤ ALTHOUGH VOLCANOES are usually thought of as highly destructive, they also have some good points.

Much rich dirt, for instance, is volcano made. And another precious product of volcanoes is diamonds. They are found in the necks of old volcanoes, the pipes through which lava once surged.

Other stones of less value and beauty are also found at old volcano sites. Pumice, the fine soft powder that dentists use for cleaning teeth, is one.

And the Hawaiian islands would not exist if volcanic eruptions had not built them.

Much of our knowledge of first century Roman society is based on discoveries made in excavations on the site of Herculaneum and Pompeii, buried by Vesuvian eruption in 79 A.D.

During the past 400 years, some 500 volcanoes have erupted.

Although they have killed about 190,000 people, their violence has also been of benefit not only in providing some of the world's richest soils but in giving rich deposits of sulfur and certain metals such as lead and zinc.

The large-scale use of volcanic power may some day make volcanoes of even more constructive value. The energy available from the gas vents and hot spring waters of volcanic regions is extremely high.

Since ancient times, man has tried to harness this energy. Some success has been achieved where fumaroles and boiling springs have been tapped, but the greatest accomplishment is near Lardarello in Tuscany, Italy, where engineers have hitched their turbines to volcanic steam.

The Italian "Valley of Hell" is no small project. It supplies 20,000,000 kilowatt hours per year of electrical energy to a land lacking both coal and petroleum.

The heat given off in volcanic eruptions comes from an extremely hot shell of glassy or crystalline material located some tens of miles below the surface. This substance becomes liquefied if the pressure on it is reduced or the temperature rises. Bending or cracking of the rocks lying above may reduce the pressure, radioactive heating may increase the temperature.

In either case, the liquefied material forms a fluid mass, called magma, that is lighter than the overlying rocks and tends to rise at an opening. Magma is called lava when it reaches the earth's surface.

Science News Letter, March 19, 1955

VETERINARY MEDICINE

Too Much Fat in Food Stops Puppy's Growth

➤ TOO MUCH fat in the food your puppy eats may prevent normal growth, University of Wisconsin tests have indicated.

Profs. J. A. Ontko, Carl Gessert and Paul Phillips, university biochemists, found that dogs like the flavor of fat, and that it adds luster to the dog's coat. But puppies given a ration containing as much as 15% fat do not grow well.

The scientists explained that a high fat content ration contains so many calories that puppies stop eating before they have consumed the normal amount of food.

Science News Letter, March 19, 1955

New and Different
Optical Radioactivity Detector!
GEIGERSCOPE

PROFESSIONAL MODEL

Designed for the research chemist, physicist, plant and safety engineer, educator and industrialist. Now in use in hundreds of laboratories in industry, atomic energy plants and major universities. More sensitive for use on radioactive samples or mineral specimens than any portable electronic instrument, regardless of price. Sturdy, durable, portable as a pocket watch. Requires no power source because it converts the energy of alpha rays directly into visible signals. Has no background count from potassium feldspar or cosmic rays. 30 power magnification. Will readily detect and measure any alpha-active isotope down to the range of a millionth of a microcurie. Detects contamination of air, surfaces, hands, apparatus not revealed by conventional instruments. Extends your measurement range. Invaluable for anyone interested in radioactivity. Supplied complete with calibrated radium standard, uranium ore sample, direction sheet and air-tight holster. Sold by mail only. UNCONDITIONAL WRITTEN GUARANTEE. Send check or money order to

$5 POSTPAID

KEN RESEARCH Sales Dept. 681 MAIN STREET, HACKENSACK 26, N. J.

PSYCHOLOGY

Fear Dominates Russians

Interviews with USSR refugees indicate that even in commonplace situations they lived under a cloak of fear. Mutual understanding is not ruled out by Russian character.

➤ RUSSIANS ARE dominated by fear even in handling everyday situations at work and at home. Americans are more concerned with protecting their own personal integrity and freedom. Neither one has more of a dictatorship personality than the other.

Such important differences as these and also a background of similarities of character were revealed by questions asked of Russian refugees in Munich, Germany, and a matched group of Americans. They were judged on the way they sized up commonplace situations involving relations between people and the action they said would be taken.

The study was conducted by Drs. Eugenia Hanfmann and H. Beier as part of a Harvard study of the Soviet Social System.

Nothing was found in the character of either people which would necessarily prevent mutual contact and understanding.

When a situation was described to the individual and he was asked to tell what the outcome would be, the American was likely to view the situation through the eyes of the "hero" of the story. The Russian would more often consider it from the various points of view of all concerned.

If the situation involved a decision whether to act in a friendly way or to be honest and truthful, the Russian was more likely than the American to put friendship first, the American more frequently would sacrifice friendship to personal integrity.

In a situation involving a choice between going along with what the group of fellow workers were doing or sticking out for what the individual thought was right or best, the Russian is also likely to differ from the American.

The American seems to regard giving in to the group as a loss of personal freedom. The Russian does not show the same need to defend his personal integrity against pressure from the group.

It was difficult for the Russians to answer some of the questions because they said such situations simply could not arise in Soviet Russia. Such was the situation in which a foreman felt his workmen were not working as fast as they should. He asked his superior what he should do, but the superior said not to worry, things might take care of themselves.

Characteristic answer was the following: "This is impossible: he must have lost his mind! How could he not worry! He is going to rave, he is going to insist with all his might that the work should go at a different pace. 'Tomorrow both of us will be in the NKVD.'"

In general, the Russians were dominated in all situations by fear. Americans showed more rebelliousness.

Results failed to show that either group, Russians or Americans, had more dictator character traits than the other.

Although striking differences between the two peoples showed up, a background of similarities is shaped by the two groups.

"There is no basis for assuming," Dr. Hanfmann, now of Brandeis University, Waltham, Mass., and Dr. Jacob W. Getzels of the University of Chicago conclude in reporting the study to *Psychological Monographs* (Vol. 69, No. 4), "that any understanding between the two nations is made impossible by some crucial difference in the character of the people themselves."

"We may perhaps draw some encouragement," they state, "from the fact that those differentiating characteristics of the Russians that have emerged most clearly in the present study can function to facilitate rather than hinder the establishment of interpersonal contact, in spite of the pressures exercised by the totalitarian state."

Science News Letter, March 19, 1955

LINGUAPHONE
MAKES IT EASY TO LISTEN and LEARN to Speak
SPANISH · FRENCH · ITALIAN
GERMAN · RUSSIAN · JAPANESE
MODERN GREEK—32 languages available

Only LINGUAPHONE World's Standard Conversational Method brings the world's best native language teacher into your home. For just 20 Minutes a Day you listen to Linguaphone's MODERN Recordings. They make it easy—AND FUN—to learn another language AT HOME—the same natural way you learned to speak English long before you went to school.

You Listen, You Understand, You SPEAK

It's like living in a foreign land, you hear native men and women converse about everyday matters with a 1054 vocabulary. You acquire a true accent no TEXTBOOK CAN TEACH.

Exciting Business, Travel Opportunities here and abroad. The Linguaphone Method is used the world over by schools, colleges, governments, large business firms. Over 1,000,000 home study students.

Stop Wishing—Start Talking! WRITE FOR FREE BOOK. Linguaphone Institute, 31-035 Radio City, New York 20, N. Y.

GENERAL SCIENCE

Talking Book Helps Blind to Be "Hams"

➤ NOW IT will be easier for a blind person to qualify for a license as a radio "ham." The Library of Congress has just made available a talking book edition of "The Radio Amateur's Novice Examination, Questions and Answers." This is a publication of the American Radio Relay League to enable the beginning radio amateur to qualify for a radio license.

The talking books are books read aloud on phonograph records with 20 minutes of reading time on each side of the record. A blind person can borrow the records from the nearest of 28 circulating libraries. He may also borrow a player. In case he lives in a rural region, it is possible to borrow a hand-wind machine. There is no charge for the loan of either the talking books or the players.

Other books of a scientific or semi-scientific nature are also available on the talking book records. These include several books for the general reader on atomic energy and others on astronomy, geology and natural history.

The Library of Congress spends a million dollars a year on the production and servicing of books for the blind. In addition to the popular talking books, the Library publishes books in Braille and Moon type.

A total of more than 44,000 blind persons use these books. By far the largest number of these are talking book readers (or listeners). In one year, the Library distributed 7,500 new talking book players.

Science News Letter, March 19, 1955

PHYSICS

Portable Atomic Reactor Is Tested in Texas

See Front Cover

➤ THE SECURITY-CLOAKED portable atomic reactor, developed by Consolidated-Vultee Aircraft Corporation, is undergoing tests at Fort Worth, Tex., in an effort to design a plane "propelled by nuclear power."

The device is shown on the front cover of this week's SCIENCE NEWS LETTER running through one of the tests. It is the first picture of the reactor that has been made public.

As the "hot" reactor hangs near the top of a 70-foot crane, instruments on the tower in the lower left hand corner measure radiation.

The reactor is hoisted up, the company says, to reduce the radiation from the device that bounces off the ground and back to the instruments.

Science News Letter, March 19, 1955

"Explains Things As Parents Wish They Could . . ."

Delightfully illustrated!

"A wonderful book . . . to explain reproductive systems of man and beast. The style . . . is easy and direct. Illustrations are informative and ample. Explains things as most parents wish they could, and leaves little to the child's imagination."—*Journal of American Medical Assn.*

"The entire process of reproduction, together with the attitudes inculcated by tradition, education, and social standards, is described clearly for children and younger adolescents."—*Science News Letter.*

HOW LIFE IF HANDED ON by Cyril Bibby

$2.50 Postfree • 5-Day Money-Back Guarantee
EMERSON BOOKS, Inc., Dept. 372-K
251 W. 19th St., New York 11

Books of the Week

For the editorial information of our readers, books received for review since last week's issue are listed. For convenient purchase of any U. S. book in print, send a remittance to cover retail price (postage will be paid) to Book Department, Science Service, 1719 N Street, N.W., Washington 6, D. C. Request free publications direct from publisher, not from Science Service.

BASIC ELECTRONICS — Van Valkenburgh, Nooger and Nelville—*Rider*, 5 volumes, 560 p. in all 5 volumes, illus., paper, $2.00 per volume or $9.00 for the set. A home study course on this important subject.

THE BOTANICAL LORE OF THE CALIFORNIA INDIANS: With Side Lights on Historical Incidents in California—John Bruno Romero whose Indian name is Ha-Ha-St — *Vantage*, 82 p., $2.50. This book by an Indian, nephew of a medicine man, describes beliefs about the curative powers of plants, some of which have been kept secret for over a hundred years.

BOTANY: Principles and Problems—Edmund W. Sinnott and Katherine S. Wilson—*McGraw-Hill*, 5th ed., 528 p., illus., $6.75. New and partly rewritten edition of 32-year-old standard text. Beautifully illustrated.

A DICTIONARY OF GEOLOGY — Godfrey W. Himus—*Penguin*, 153 p., illus., paper, 50 cents. Intended to enable the general reader to understand the language of geologists.

DO IT YOURSELF: Or My Neighbor Is an Idiot —M. Brickman—*Gilbert Press (Messner)*, 176 drawings, $2.95. Cartoons showing the predicaments a man with hand or power tools can get himself into.

ELECTRICITY—Eric de Ville—*Penguin*, 159 p., illus., paper, 65 cents. The story from Franklin's experiments with the kite to the development of the atomic bomb and discoveries of radar and the electron microscope.

FALL CHANGES — Eva L. Gordon, Richard B. Fischer and Verne N. Rockcastle — *New York State College of Agriculture*, Cornell Rural School Leaflet, 32 p., illus., paper, 10 cents. The color of leaves and the beginning of cold weather are by no means all of the many changes in nature in the fall.

GENETICS AND HUMAN HEREDITY — J. Ben Hill and Helen D. Hill—*McGraw-Hill*, 526 p., illus., $6.50. A college text for either liberal arts or agriculture students.

THE GYROSCOPE APPLIED—K. I. T. Richardson—*Philosophical Library*, 384 p., illus., $15.00. The properties of this device affect everyone if only because the earth itself is in effect a gigantic gyroscope.

HOW TO INSTALL TV ANTENNAS—Samuel L. Marshall—*Rider*, 124 p., illus., paper, $2.50. In addition to being a good electronic technician, the antenna installation man must be a rigger, a roofer, an electrician and a mason.

AN INTRODUCTION TO DEDUCTIVE LOGIC—Hugues Leblanc — *Wiley*, 244 p., $4.75. A manual for advanced undergraduate and elementary graduate work in logic.

THE JOURNAL OF BIOPHYSICAL AND BIOCHEMICAL CYTOLOGY: Volume 1, No. 1—Richard S. Bear and others, Eds.—*Rockefeller Institute for Medical Research*, 92 p., illus., paper, bimonthly $1.50 or $7.50 per volume. This new journal will give special attention to cellular organization at the colloidal and molecular levels and to studies integrating cytological information from various technical approaches.

A LIST OF PUBLISHED AND PROCESSED REPORTS ON RESEARCH IN FOODS, HUMAN NUTRITION AND HOME ECONOMICS AT THE LAND GRANT INSTITUTIONS — Compiled by Christine Justin and Georgian Adams—*U. S. Department of Agriculture*, 75 p., paper. Free upon request direct to publisher, State Experiment Stations Division, Agricultural Research Service, USDA, Washington 25, D. C.

LOAD-CARRYING CAPACITY OF FROST-AFFECTED ROADS—C. L. Motl and Carl E. Vogelgesang—*Highway Research Board*, Bulletin 96, 23 p., illus., paper, 45 cents. Reporting tests made in Oregon, Indiana and Nebraska.

LOOKOUT FOR THE FOREST: A Conservation Story—Glenn O. Blough—*McGraw-Hill*, 48 p., illus., $2.25. A child's story book intended to interest him in forest fire prevention. The jacket has an application form so that he can join "Smokey Bear's" Junior Forest Rangers.

A MODERN PERSPECTIVE OF THE GRINDING PROCESS—H. R. Letner—*Mellon Institute*, 7 p., illus., paper, free upon request direct to publisher, 4400 Fifth Ave., Pittsburgh 13, Pa.

PICTURE BOOK OF TV TROUBLES: Volume 2, Vertical Sweep and Deflection Circuits—John F. Rider Laboratory Staff — *Rider*, 91 p., illus., paper, $1.80. For the trouble shooter, faults are here arranged by receiver circuit.

PSITTACOSIS: Diagnosis, Epidemiology and Control — F. R. Beaudette, Ed. — *Rutgers University Press*, 240 p., illus., $5.00. Symposium papers which show that "parrot fever" can be spread by many different kinds of birds and even by mammals.

RIDER'S SPECIALIZED TAPE RECORDER MANUAL: Volume 1, 1950-1954—*Rider*, 286 p., illus., paper, $4.50. Service information on popular kinds of magnetic tape recorders.

SCIENCE WITH TOYS — Eva L. Gordon and Philip G. Johnson—*New York State College of Agriculture*, Cornell Rural School Leaflet, 32 p., illus., paper, 10 cents. Explaining how various kinds of common toys operate.

SPECTROS MOLECULAR: II Tractamentos del Coordinatas Normal de Moleculas Polyatomic A. Theoria General—Salvador M. Ferigle and Alfons Weber — *Forrest F. Cleveland and the authors*, 27 p., paper, $1.00. The second of a series of monographs on molecular spectra written in the international language, Interlingua. This monograph explains the theory.

THE STORY OF OUR TIME: Encyclopedia Year Book 1955—Marian Lockwood, Ed.—*Grolier Society and Richards*, 431 p., illus., $4.95. Watson Davis contributed the section on Science Highlights. There are also articles on Interlingua and the science manpower shortage.

A TEXTBOOK OF PHYSIOLOGY—John F. Fulton, Ed.—*Saunders*, 17th ed., 1275 p., illus., $13.50. Bringing up to date the famous text originally written by the late W. H. Howell. The first seven chapters have been completely rewritten and a new chapter on acetylcholine and energy transformations in nerve cells has been added.

TWENTY YEARS OF NURSE-MIDWIFERY — *Maternity Center Association*, 124 p., illus., paper, $2.00. Describing progress in a relatively new profession.

THE VERTEBRATE BODY — Alfred Sherwood Romer—*Saunders*, 2d ed., 644 p., illus., $7.00. An introductory account of vertebrate anatomy and physiology.

Science News Letter, March 19, 1955

The world's first *engineering school* was founded in Paris in 1747.

SURPLUS TOOL BARGAINS Save Up To 50%

41 $2 SURPLUS TWIST DRILLS

For hand or electric drills. Brand new genuine hardened carbon tool steel drills from 1/16" through 1/4". Each drill designed and tempered to give up to 1800 drillings through steel, aluminum, iron, wood, plastic. Sells in the stores for up to $6. Set of 41 drills $2.00.

5 PLIER SET

For jewelers, optical workers, hobbyists. These superb German instruments are of drop-forged, high-quality tool steel. All ground and smooth working joints with just right tension, jaws meet perfectly to safely and securely hold most delicate objects. Each plier is 4" long and a veritable gem of precision and strength.

FLAT NOSE
ROUND NOSE
DIAGONAL
SNIPE
COMBINATION

75¢ EACH

All 5 for $3.50

The GREATEST value we've offered!

21 Pc. 1/4" & 1/2" DRIVE SOCKET SET

A $14.95 Value

OUR PRICE $5.95

Perfect for AUTOMOTIVE, TV, RADIO & HOME APPLIANCE Repair!

This complete 21 piece socket set has eight 12 point sockets, sizes 7/16", 1/2", 9/16", 5/8", 11/16", 3/4", 7/8" and 15/16" plus an 8" extension, L handle, reversible ratchet and reversible screw driver. Also six 1/4" Drive Sockets, size 1/4", 5/16", 11/32", 3/8", 7/16" and 1/4" square, L handle and extra large extension with shock-proof plastic handle. All sockets, extensions, wrenches, ratchets, etc., fit snugly and easily into a handy metal carrying tray—all bright finished and precision constructed for long life ——— unconditionally guaranteed.

Gov't. Surplus DuPont NYLON CORDS BELOW MANUFACTURER'S COST

Light, strong, durable, quick-drying. Will not rot or mildew. Ideal for indoor or outdoor use. Camping, boating, hunting, clothesline and venetian blinds. Perfect for tent ropes, light anchors, deer cord, trot lines, crabbing, etc.

OUTWEARS ORDINARY ROPE 10 to 1

NYLON BRAIDED CORD
1/16" dia.—100 lb. test—white ..... 1½¢ per ft.
1/8" dia.—375 lb. test—white ..... 2¢ per ft.
3/16" dia.—550 lb. test—olive drab ..... per ft. 2½¢
In 100, 200, 300, 400, 500 ft. and over lengths.

NYLON BRAIDED LINE
1/4" dia.—1000 lb. test—olive drab ..... 3¢ per ft.
In 30 and 50 ft. lengths.

NYLON ROPE
3/8" dia.—2,700 lb. test. Any length to 1200 ft. 18¢ per ft.
7/16" dia.—3,800 lb. test. 18¢ per ft.
Any length from 20 to 120 ft.
Minimum Order $1.00. Send Check or M.O. C.O.D. plus fee. Money Back Guarantee.

NYLON FISH LINE
Proven best by experienced fishermen. Heat stretched. Will not kink, twist or unravel. 25 lb. Test. 300 ft., reg. $1. NOW 50¢ per spool.

NYLON WEB STRAPS
with sturdy steel buckle
Perfect for luggage straps, car-tow-lines, car carrying straps, boat trailer straps, etc. Tie heavy equipment and machinery with greater ease and safety . . . at far less cost. Just the thing for the garage or workshop.
1" wide—3,000 lb. test— 10¢ per foot
1¾" wide—6,000 lb. test— 15¢ per foot
In 5, 6, 8, 10, 12 ft. lengths.

HOW TO ORDER

Send check or money order with name and address. We pay postage. If C.O.D. you pay postage and C.O.D. charges. Money back guarantee protects you fully. Rush orders today.

Scott-Mitchell House Inc.
611 Broadway, New York 12
Dept. 2403

BOTANY

NATURE RAMBLINGS

Hepatica

➤ MOST OF us can bring at best only a patient acceptance to the spring's earliest flower offerings—skunk cabbage and pussy willows and the like. We admit without argument that the naturalists are right when they tell us these are flowers; but what we actually hanker for is a real flower, one with bright petals strung around into a collar with some leaves to back it up.

The hepatica satisfies this demand, and it is among the earliest of flowers to do so. It will be out in force to greet the earliest robin, while the branches of the trees above it are still bare, while the first violets are making the most timid of bows.

The little white or bluish flowers nestle down on their short, hairy stems among the dead leaves and frequently you can find them by brushing aside these brown blankets, still flecked with the last light fall of snow.

The hepatica is a hardy little plant in any case, for its last year's leaves hang on through the winter, and the new spring crop of foliage does not develop until after the blossoms are gone. A little closer examination of the stems will show that the leaves are thickly clothed with stiff little hairs. These, of course, are not of use to the plant for keeping warm as an animal keeps warm with its fur. Apparently their role is to keep the hoarfrosts of spring from a too close contact with the stem.

Although we are apt to give it little thought, it is nevertheless true that the woods harbor many more kinds of evergreens down at the roots of the trees than can be counted among the pines and spruces and cedars. Of this lesser evergreen population the hepatica is one of the most frequently found specimens.

The sturdy little hepatica appears to have little concern for the length of the winter season, for it will send forth its delicate white or bluish flowers at about this time every year. It does so even though later storms may force it to close its flowers about the stamens and pistil and wait with patience until the last of winter's storms have passed.

Then again it unfolds its flowers to the warm kiss of spring's sunshine, harbinger of the many flowers to come.

Science News Letter, March 19, 1955

- Specimen Slides
- Microscopes
- Oculars—Stains
- Microscope Illuminators
- Mechanical Stages
- Objectives
- Mounting Media
- Microscope Parts

SPECIALIZED EQUIPMENT

Our complete stock of Specialized Equipment is designed to meet the precision needs of science and industry.

USED EQUIPMENT PURCHASED

Write today to Dep't NWL for our Illustrated Microscope & Telescope Catalog & Price List.

BENJAMIN MILLER

134 W. 32 St., N. Y. 1, N. Y. PE. 6-8384

MEDICINE

Meningitis Caught Like Cold; Germs Spread It

➤ MENINGITIS, WHICH has struck soldiers at Fort Dix, N. J., killing at least two, is not a highly infectious disease. The meningococcus germs enter and leave the body by the lining of the nose and throat, so the disease is caught like a cold by contact or coughing or sneezing.

It may spread from a patient or from a healthy carrier of the germs.

The disease has been on the down-grade in the nation generally for the past year or so. North Carolina, Texas and California have reported more cases in recent weeks than New Jersey. Latest report from New Jersey, for the week ending March 5, shows five cases compared to three in New Jersey the previous week.

Before the advent of the sulfa drugs, meningitis was treated by a serum. Sulfadiazine is now used both as a preventive and as treatment and penicillin is now also used as treatment.

During World War I meningitis was a big problem among recruits in training camps. During the second World War it was no longer a grave problem.

The word meningitis means inflammation of the membranes that cover the brain. The kind that comes in epidemics and that hits recruits in Army camps is caused by a germ called the meningococcus. This kind of meningitis is also called cerebrospinal fever and spotted fever. This last name comes from the rash that is one symptom. Headache, severe chill and vomiting and fever are other common symptoms.

Meningitis may also be caused by a germ called *Hemophilus influenzae*. This form is called influenzal meningitis, but has nothing to do with influenza.

One very severe form of meningitis starts suddenly and may kill in 24 hours, before any treatment can help. Massive adrenal gland hemorrhage is a feature of this kind, known as Waterhouse-Friederichsen disease or syndrome. This is reported the kind that killed one of the Fort Dix soldiers.

Science News Letter, March 19, 1955

METALLURGY

Titanium Aircraft Bolt Resists Fatigue Tension

➤ AN AIRCRAFT tension bolt of titanium alloy that resists fatigue and is pound for pound twice as strong as steel has been developed by Standard Pressed Steel Co., Jenkintown, Pa.

New forging and threading techniques for the titanium alloy containing four percent manganese and four percent aluminum allowed the production of the lightweight fastener for frames and engines of aircraft.

Science News Letter, March 19, 1955

Questions

ELECTRONICS—How do the conduction properties of the new semiconducting liquid differ from those of an ordinary liquid? p. 181.

How large is the new airborne electronic "brain" expected to be and how fast can it add? p. 178.

□ □ □

GEOLOGY—What are some of the uses for volcanoes? p. 187.

□ □ □

MEDICINE—What do the stop-and-go chemicals at nerve junctions do? p. 179.

□ □ □

PHYSICS—What are the three heavy fissionable elements? p. 178.

□ □ □

Photographs: Cover, Convair; p. 178, Bell Telephone Laboratories; p. 179, Ohio State University; p. 182, Albertis, Yale News Bureau; p. 183, General Electric; p. 186, James Burke; p. 192, Kling Photo Corp.

SPECIALISTS

Used microscopes and accessories. Unusual selection of prepared slides. Microscopy supplies. Biological kits. Scientific oddities. Fossilized insects in amber. Meteorites, minerals, sea shells. Pre-historic animals in miniature. Insects in alcohol. Telescopes.

Our fully illustrated 1955 Catalog free.

RESEARCH SCIENTIFIC SUPPLIES Inc.

60 Wall St. New York 5, N. Y.

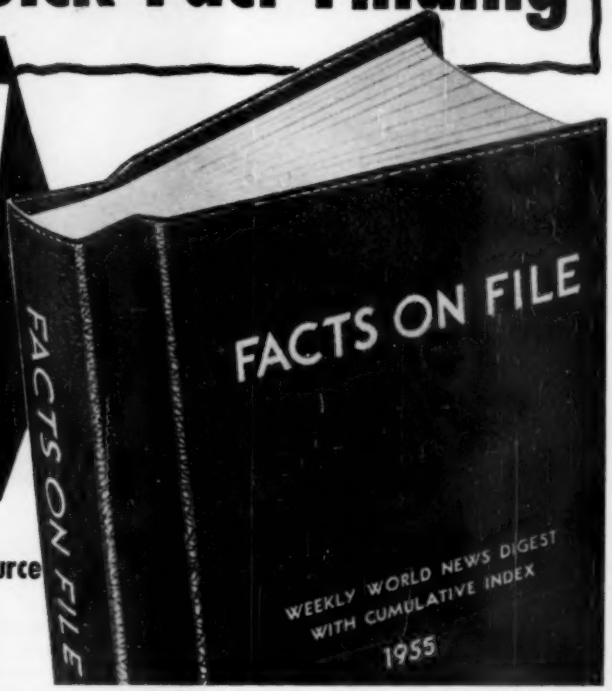
ONLY WAY TO GET

All World News Every Week — Indexed for Quick Fact-Finding

THE NEWS DIGEST

PLUS THE INDEX

Becomes the Encyclopedia



News Facts At Your Fingertips, Unslanted, Unbiased, Drawn From Every Major News Source

FACTS ON FILE

Now—throw all those news clippings, newspapers, magazines and messy files right into the waste basket. Now—let FACTS ON FILE cover the *current* news for you, pin-point *past* news facts for you in seconds! Used and proven priceless by thousands of individuals, companies, newspapers, radio networks, businesses everywhere in the world!

"Unique — "Indispensable" — "A Lifesaver"

Each week FACTS ON FILE's veteran newsmen digest and index the vital news of the world from 77 newspapers, hundreds of magazines, press releases and out-of-the-way news sources. Every Friday night the NEWS DIGEST is mailed to you with all the news of the past seven days—eight 8½" x 11" pages containing 1,100,000 words expertly reduced to 10,000. Then, every two weeks you receive the INDEX, containing every name, date, fact and quotation indexed and cross-indexed . . . material that grows into a complete file of the year's news on every subject indexed for instant reference.

An Amazing Special FOF Offer

Prove what FACTS ON FILE can mean to you by mailing the coupon. You get *complete service through* June 30, 1955, plus back copies from January 1, 1955, plus a Deluxe spring binder (total value $35.00) for just $6.00! And — if at the end of your trial subscription you are not fully satisfied, we will refund your $6.00. But — we cannot hold this offer open indefinitely, so we urge you to mail the coupon today!

REPRESENTATIVE FOF SUBSCRIBERS

Standard Oil Co.
DuPont
I.B.M.
Western Union
Drew Pearson
Army, Navy, Air Force
New York Times (Washington Bureau)
Young & Rubicam
AP, UP, INS, INP
Time, Life, Fortune
NBC, CBS, MBS, ABC
Yale
Harvard
United Nations Library

The Famous FACTS ON FILE Advisory Board

Prof. A. J. BARNOUW — *Letters*
Dr. E. C. BRENNER — *Medical Science*
Prof. F. W. COKER — *Political Science*
Prof. J. Anton DE HAAS — *Economics*
David DIETZ — *Science*
Dr. H. D. GIDEONSE — *Education*
John GUNTHER — *History*
H. V. KALTENBORN — *News Analysis*
William L. SHIRER — *World Affairs*
Dr. Frank H. SOMMER — *Law*
Prof. F. TANNENBAUM — *Latin America*
Dr. C. C. WILLIAMSON — *Library Service*

FACTS ON FILE, Dept. 88-3
516 Fifth Ave., New York 36, N. Y.

Please send me the complete FOF service (News Digests, Cumulative Indexes and Binder) through June 30, 1955, plus back copies from January 1, 1955 for the special price of just $6.00. I understand that if I am not completely satisfied at the end of the trial I may return the material for a full refund.

Name_____

Address_____

City, Zone, State_____

☐ Remittance enclosed ☐ Please bill me

THIS OFFER VALID FOR NEW SUBSCRIBERS ONLY

• New Machines and Gadgets •

For sources of more information on new things described, send a self-addressed stamped envelope to SCIENCE NEWS LETTER, 1719 N St., N.W., Washington 6, D. C., and ask for Gadget Bulletin 770. To receive this Gadget Bulletin without special request each week, remit $1.50 for one year's subscription.

WING MIRROR converts standard automobile mirrors into both rear and side-view device. Long center rear-view mirror is flanked on each side by a smaller wing mirror with full 180-degree adjustment.

Science News Letter, March 19, 1955

SIGN KIT to be used at home contains reflective sheeting and patterns for letters and numerals. Designed for making lawn, mail box, lake cabin or driveway signs, the red or silver sheets are coated on the back with a weather-proof adhesive. Flashlight or headlight causes letters to reflect.

Science News Letter, March 19, 1955

WASHING POUCH for car owners eliminates water buckets and toweling. Made of a plastic polyester fiber, the self-sudsing pouch measures seven and one-half by nine inches. A cleaning agent is put into the zippered pouch and the pouch wetted. Car cleaner can be rinsed after using and hung up to dry.

Science News Letter, March 19, 1955

WATERPROOF SHOE leather is a special silicone product that is tanned-in to make shoe upper leather keep out water, stay soft and flexible, and still "breathe." The new shoe leather will be made into golf shoes, working and sports boots and dress shoes for children and men.

Science News Letter, March 19, 1955

RIGHT-ANGLE FINDER attachment for miniature camera permits photographers to take pictures to the right or left of them while facing straight ahead. Made of a lightweight alloy, this "detective style" accessory, shown in the photograph, clips over the viewfinder eyepiece of the small camera.

Science News Letter, March 19, 1955

MAGNIFYING GLASS provides illumination and magnification at the same time. This illuminated rectangular reading aid has a built-in light, and switch, that can be plugged into any standard 110-, 120-volt a-c outlet.

Science News Letter, March 19, 1955

TRAVEL GAME provides fun for whole family on long trips. Styled after bingo, players cross off objects on the cards as they see them during the trip. Game box includes supply of game sheets in different colors and marking crayons.

Science News Letter, March 19, 1955

SOLDERING OUTFIT contains three interchangeable irons that fit one handle, affording a range of irons in wattage and size of tip for most jobs. The outfit, packed in a steel tool case, also contains a safety stand, solder, acid and rosin core. Irons are 150-watt with 1⅛ inch tip, 100-watt with ¾ inch tip and 60-watt with ¼ inch tip.

Science News Letter, March 19, 1955

We wish to serve you—

LET US ORDER YOUR BOOK

Don't Delay

getting that NEW BOOK you want to read. SCIENCE NEWS LETTER will gladly obtain for you any American book or magazine in print. Send check or money order covering regular retail price ($5 if price is unknown and adjustment will be made). We will pay postage in the United States Mail us your order, listing title, author, publisher, price, and mail, with your complete return address, to Book Department, Science Service, 1719 N Street, N. W., Washington 6, D. C.

3-19-5

Do You Know?

A *shock tube* allows engineers to study the effects of blasts without exploding a bomb.

Ozone content of the atmosphere near the earth can be measured continuously by a new photoelectric instrument.

Some precision snap-action *switches* used in modern combat planes are so small that 258 of them weigh only one pound.

The death rate in the United States from all forms of *cancer* rose in 1954 as compared with the year before, insurance records show.

Radioactive material deposited during *fall-out* after an atomic explosion may or may not be visible, but could be detected by instruments such as Geiger counters.

Most *cells* in animals and plants do not grow and divide indefinitely; they develop into specialized tissues, like nerves or muscles, then cease to divide.

A northward-flowing *ocean current*, called the Davidson countercurrent, that periodically appears close to the California coast is stronger in winter than in summer.

Bacteria, which are subject to diseases, in some instances synthesize compounds which kill themselves as well as other sensitive strains.